



# Aviation Investigation Final Report

<b>Location:</b>	BROOTEN, Minnesota	<b>Accident Number:</b>	CHI83LA297
<b>Date &amp; Time:</b>	July 5, 1983, 08:00 Local	<b>Registration:</b>	N4028K
<b>Aircraft:</b>	HILLER UH-12E	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 137: Agricultural		

## Analysis

THE HELICOPTER HAD JUST LIFTED OFF OF THE FLATBED OF A TRUCK WHEN IT STARTED TO SPIN. THE PLT LOWERED THE COLLECTIVE, REDUCED THE POWER & LANDED BESIDE THE TRUCK. DURING TOUCHDOWN, THE MAIN ROTOR BLADES STRUCK THE TRUCK. AN INVESTIGATION REVEALED THAT THE THRUST BEARING, PN 25200-3, IN THE TAIL ROTOR DRIVE WAS INSTALLED BACKWARDS. THIS ALLOWED THE BEVELED DRIVE GEAR TO MOVE FORWARD & BECOME DISENGAGED FROM THE TAIL ROTOR DRIVE GEAR.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

### Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION  
Phase of Operation: TAKEOFF - INITIAL CLIMB

#### Findings

1. (C) ROTOR DRIVE SYSTEM, TAIL ROTOR GEARBOX(90 DEG) - DISCONNECTED
  2. (C) MAINTENANCE, INSTALLATION - IMPROPER - OTHER MAINTENANCE PERSONNEL
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Occurrence #2: LOSS OF CONTROL - IN FLIGHT  
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

3. (F) DIRECTIONAL CONTROL - NOT POSSIBLE - PILOT IN COMMAND

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Occurrence #3: FORCED LANDING

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

4. (F) AUTOROTATION - PERFORMED - PILOT IN COMMAND

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Occurrence #4: IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

5. (F) OBJECT - VEHICLE

## Factual Information

### Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	44, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Center
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>		<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 Valid Medical--no waivers/lim.	<b>Last FAA Medical Exam:</b>	January 7, 1983
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	3260 hours (Total, all aircraft), 360 hours (Total, this make and model), 3200 hours (Pilot In Command, all aircraft), 120 hours (Last 90 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	HILLER	<b>Registration:</b>	N4028K
<b>Model/Series:</b>	UH-12E UH-12E	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Restricted (Special)	<b>Serial Number:</b>	5069
<b>Landing Gear Type:</b>	Skid	<b>Seats:</b>	3
<b>Date/Type of Last Inspection:</b>	April 15, 1983 Annual	<b>Certified Max Gross Wt.:</b>	3100 lbs
<b>Time Since Last Inspection:</b>	117 Hrs	<b>Engines:</b>	1 Turbo shaft
<b>Airframe Total Time:</b>	545 Hrs	<b>Engine Manufacturer:</b>	ALLISON
<b>ELT:</b>	Not installed	<b>Engine Model/Series:</b>	250-C20B
<b>Registered Owner:</b>	BONANZA VALLEY AVIATION	<b>Rated Power:</b>	305 Horsepower
<b>Operator:</b>		<b>Operating Certificate(s) Held:</b>	
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>		<b>Distance from Accident Site:</b>	
<b>Observation Time:</b>		<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	25 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	4 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	360°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>		<b>Temperature/Dew Point:</b>	16°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	BROOTEN , MN	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>		<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	08:00 Local	<b>Type of Airspace:</b>	Class G

## Airport Information

<b>Airport:</b>		<b>Runway Surface Type:</b>	
<b>Airport Elevation:</b>		<b>Runway Surface Condition:</b>	
<b>Runway Used:</b>	0	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	Forced landing

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	

## Administrative Information

**Investigator In Charge (IIC):** Seidlein, George

**Additional Participating Persons:**

**Original Publish Date:**

**Last Revision Date:**

**Investigation Class:** [Class](#)

**Note:**

**Investigation Docket:** <https://data.nts.gov/Docket?ProjectID=12248>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

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